



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II  
245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

December 28, 2015

Mr. Richard Michael Glover  
Site Vice President  
H. B. Robinson Steam Electric Plant  
Duke Energy  
3581 West Entrance Road, RNPA01  
Hartsville, South Carolina 29550

**SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT - NRC EVALUATION OF  
CHANGES, TESTS, AND EXPERIMENTS AND PERMANENT PLANT  
MODIFICATIONS INSPECTION REPORT 05000261/2015007**

Dear Mr. Glover:

On November 19, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your H. B. Robinson Steam Electric Plant, Unit 2. On November 19, 2015, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

The NRC inspectors did not identify any findings or violations of more than minor significance.

In accordance with Title 10 of the *Code of Federal Regulations* 2.390 of the NRC's "Rules of Practice", a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Jonathan H. Bartley, Chief  
Engineering Branch 1  
Division of Reactor Safety

Docket No.: 50-261  
License No.: DPR-23

Enclosure:  
Inspection Report 05000261/2015007  
w/Attachment: Supplemental Information

cc Distribution via Listserv

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DATE	12/22/2015	12/22/2015	12/22/2015	12/22/2015	12/28/2015		
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Letter to R. Michael Glover from Jonathan Bartley dated December 28, 2015.

SUBJECT: H. B. ROBINSON STEAM ELECTRIC PLANT - NRC EVALUATION OF  
CHANGES, TESTS, AND EXPERIMENTS AND PERMANENT PLANT  
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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket No: 50-261

License No: DPR-23

Report No: 005000261/2015007

Facility: H. B. Robinson Steam Electric Plant, Unit 2

Location: 3581 West Entrance Road  
Hartsville, SC 29550

Dates: October 26, 2015 through November 19, 2015

Inspectors: D. Hardage, Senior Resident Inspector  
T. C. Su, Reactor Inspector  
D. Jackson, Project Engineer  
E. Bousquet, Trainee

Approved by: Jonathan H. Bartley, Chief  
Engineering Branch 1  
Division of Reactor Safety

Enclosure

## **SUMMARY**

IR 05000261/2015007, October 26, 2015, through November 19, 2015; Duke Energy Progress, Inc., H.B. Robinson Steam Electric Plant, Unit 2; NRC Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications.

This report covers a two-week, on-site inspection by two regional inspectors and one resident inspector. No findings or violations were identified. The Nuclear Regulatory Commission's (NRC's) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

#### 1R17 Evaluations of Changes, Tests Experiments, and Permanent Plant Modifications (71111.17T)

##### a. Inspection Scope

Evaluations of Changes, Tests Experiments: The team reviewed eight safety evaluations performed pursuant to Title 10, *Code of Federal Regulations* (CFR) 50.59, "Changes, tests, and experiments," to determine if the evaluations were adequate and that prior NRC approval was obtained as appropriate. The team also reviewed 15 screenings where licensee personnel had determined that a 10 CFR 50.59 evaluation was not necessary. The team reviewed these documents to determine if:

- the changes, tests, or experiments performed were evaluated in accordance with 10 CFR 50.59 and that sufficient documentation existed to confirm that a license amendment was not required;
- the safety issues requiring the changes, tests or experiments were resolved;
- the licensee conclusions for evaluations of changes, tests, or experiments were correct and consistent with 10 CFR 50.59; and
- the design and licensing basis documentation used to support the change was updated to reflect the change.

The team used, in part, Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1, to determine acceptability of the completed evaluations and screenings. The NEI document was endorsed by the NRC in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000.

Permanent Plant Modifications: The team reviewed 10 permanent plant modifications that had been installed in the plant during the last three years. The modifications reviewed are listed below:

- DCHG 0000275044, EDG A Voltage Regulator Replacement child EC#1
- DCHG 0000277390, Replace TE-410, TE-420 & TE-430 Cold leg RTDs Revision 2: Revise Torque Values for the subject RTD PATEL Conduit Seal Assembly Interface Fitting
- DCHG 0000280186, Replace Existing A1 and B1 Battery Chargers child EC#1 to master EC 77389 Replace Battery Charger A1
- DCHG 0000280351, Relocate RPS System BFD/NBFD Relays, RF0-29 Modification child EC for Rack 61 Implementation (Master EC 68034)
- DCHG 0000284282, Replace RHR-744A AND RHR-744B Motors
- DCHG 0000291633, Diesel Fire Pump Engine Replacement
- DCHG 0000292104, NUS Replacement for Hagan Function Generators LTAM RNP-10-359 LRPF 428011
- DCHG 0000272331, Replace EDG FO Day Tank Solenoid Valves

- DCHG 0000279462, Replace CST Level Transmitter
- DCHG 0000300624, Replace Thermal Overloads for SI-864A

The modifications were selected based upon risk significance, safety significance, and complexity. The team reviewed the modifications selected to determine if:

- the supporting design and licensing basis documentation was updated;
- the changes were in accordance with the specified design requirements;
- the procedures and training plans affected by the modification had been adequately updated;
- the test documentation as required by the applicable test programs had been updated; and
- post-modification testing adequately verified system operability and/or functionality.

The team also used applicable industry standards to evaluate acceptability of the modifications and performed walkdowns of accessible portions of the modifications. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On November 19, 2015, the team presented the inspection results to Mr. Glover and other members of the licensee's staff. The team verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

## SUPPLEMENTARY INFORMATION

### KEY POINTS OF CONTACT

#### Licensee personnel

J. Brady, Regulatory Affairs  
G. Eakins, Major Projects Design Engineer  
S. Connelly, Licensing  
M. Glover, Site Vice President  
D. Hoffman, Nuclear Oversight Manager  
A. Helms, Principal Engineer  
D. Hunt, Engineer III  
R. Ludwick, Lead Engineer  
A. Mallner, Lead Engineer  
E. Saunders, Engineer II  
M. Watkins, Senior Engineer  
V. Balakhnin, Lead Engineer  
K. Brown, Contract Engineer  
D. Coon, Senior Engineer  
T. Halker, Senior Engineer  
L. Hall, Senior Nuclear Emergency Preparedness Specialist  
H. King, Engineer III  
T. Nance, Senior Engineer

#### NRC personnel

K. Ellis, Senior Resident Inspector  
C. Scott, Resident Inspector

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

None

#### Closed

None

#### Discussed

None



## LIST OF DOCUMENTS REVIEWED

### 10 CFR 50.59 Evaluations:

REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, EC 69883, Install RCS Zinc Injection Skid  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, DCHG 0000275690, Delete Steam Flow Feed Flow Mismatch into Rx Trip on low SG Level  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, DCHG 0000279037, Safe Shutdown Analysis Update for Appendix R Administrative Revision  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, DCHG 0000280767, Correct LOCA Containment Analysis Errors  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, EC 83803, RCP Safe Shutdown Seals  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, EC 86806, Permanent Canal Seal Plate  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, DCHG 0000729915, Robinson Nuclear Plant Cycle 30 Reload  
REG-NGGC-0010, Attachment 11 – 10 CFR 50.59 Evaluation, DCHG 0000280836, EQ Pressure Profile Update

### 10 CFR 50.59 Screening:

REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000266508, Replace SST-2F AND SST-2G  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000268034, Relocate RPS System BFD/NBFD Relays  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000272478, Alternate Replacement of CC-728C, RCP "C" Thermal Barrier CC Outlet Stop Valve  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000272901, NUS Replacement for Hagan Controllers/M-A Stations Alternate Replacement EC  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000276171, Provide Alt Level Control Transmitter for SG Level Control System  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000277383, Containment Equipment Hatch Upgrade Project, LTAM RNP-11-0145  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000278571, RCP Seal Injection Flow Indication in the Control Room, LTAM RNP-10-0319  
REG-NGGC-0010, Attachment 1 – Screen, EC 83170, PHASE 1 - EOP Upgrade Project  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000284078, Replace ESF Timing Relays  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000292547, Battery B Specification  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000293383, Permanently Replace the DSDG Output Cable  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000294167, Alternate RCS Vent for LTOP  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000285368, LTOP temperature alarm change  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000274159, Cut and Cap SW Cooling Lines to FW penetrations  
REG-NGGC-0010, Attachment 1 – Screen, DCHG 0000284188, Switchyard and Electrical Bus Protection Upgrade

Licensing Bases Documents

Technical Specifications and Bases, Current  
 Updated Final Safety Analysis, Current

Procedures

AD-EG-ALL-1117, Design Analyses and Calculations, Revision 2  
 AD-EG-ALL-1176, Preparation of Engineering Documents, Revision 0  
 APP-036, Auxiliary Annunciator, Revision 89  
 OP-601, DC Supply System, Revision 58  
 EGR-NGGC-0106, AC and DC Overvoltage Protection and Coordination, Revision 4  
 AOP-031, Robinson Plant Operating Manual Volume 3, Part 5, Abnormal Operating Procedure, Revision 15  
 OST-603-1, Engine Driven Fire Pump Test, Revision 7  
 FP-012, Fire Protection Systems Minimum Equipment and Compensatory Actions, Revision 19

Drawings

B-190628 Sheet 120A, Control Wiring Diagram, Pressurizer Relief Valve PCV-455C, Revision 21  
 B-190628 Sheet 120B, Control Wiring Diagram, Pressurizer Relief Valve PCV-455C, Revision 16  
 B-190628 Sheet 885, Control Wiring Diagram, Revision 4  
 HBR2-8608, Hagan Wiring Diagram, RCS High Pressure Low Temp. Protection, Revision 19  
 5379-3482, CP&L Hagan Wiring Diagram, Revision 30  
 5379-3492, CP&L Hagan Wiring Diagram, Revision 13  
 5379-3506, CP&L Hagan Wiring Diagram, Revision 21  
 5379-3535, CP&L Hagan Wiring Diagram, Revision 20  
 342500M06BC01, Sheet 13 Page 1 of 2, Magnetic Technologies Corp. Dry Type Transformer, R1  
 342500M06BC01, Sheet 13 Page 2 of 2, Magnetic Technologies Corp. Dry Type Transformer, R0  
 06010786-LD-1, Nuclear Logistic Inc., Layout Drawing for Relay Mounting Plate (BF and BFD) Relays

Calculations

RNP-E-8.016, Revision 9, Emergency Diesel Generator Static and Dynamic Analysis for H.B. Robinson Unit No.2  
 RNP-E-7.002, Revision 12, Emergency Equipment Load Factor Study  
 RNP-E-8.002, Revision 8A, AC Auxiliary Electrical Distribution System Voltage I Load Flow I Fault Current Study  
 RNP-E-8.042, AC MOV Protection Evaluation Based on Computer Program "Motorguard", Revision 6  
 RNP-E-8.042, Attachment E, Field Testing of Thermal Overload Relays, Revision 2

Design Basis Documents

DBD/R87038/SD05, Revision 9, Emergency Diesel Generator System  
 DBD/R87038/SD16, Revision 3, Electrical Power Distribution System  
 DBD/R87038/SD06, Revision 12, Reactor Safeguards and Protection System

CRs (Condition Reports)

NCR-749789, Valve SI-864A (RWST Discharge) failed to stroke  
 NCR-704926, Administrative Error in Section 7.2.1.1.2 of UFSAR  
 NCR 751728, Procedure Revision Issued Before EC Implementation  
 NCR 751913, MM-432B Found Out of Tolerance

Miscellaneous Documents

Field Testing of Thermal Relays, Westinghouse Electrical Corporation, Dated 4/23/80  
 Type A Thermal Overload Relays Size 1 and 2, 2 Pole Non-Compensated or Ambient  
 Compensated Westinghouse Corporation, Effective April 1969  
 NEI 01-01, Guideline on Licensing Digital Upgrades, Charter 4, Licensing Process and 10 CFR  
 50.59, Revision 1  
 Engineering Change 100624, Replace Thermal Overloads for SI-864A, R1  
 Engineering Change 66508, Replace SST-2F and SST-2G, R12  
 Engineering Change 84282, Replace RHR-744A/B, R3  
 NUS-A033SA, Equivalence Review of NUSI PID 801 Module, Revision 1  
 QR-06010786-1, NLI, Qualification Report for BF & BFD Mounting Plate, Revision 4

Corrective Action Program Documents generated as a result of the inspection

CR 1967115 Reg AR 632591 Did Not Include Justification for a Question  
 CR 1970236 EC 72901 Incorrectly Identifies Isolation of P-444 and P-501  
 CR 1970394 50.59 Screen Lacks Detail (EC 284188)  
 CR 1976126 EREG Assignment 623351-03 Completed Incorrectly  
 CR 1976196 Calculation RNP-E-8.002 Error  
 CR 1976210 CST LT-1454A label/insulation missed  
 CR 1976328 Calibration Data Omitted from OST-646  
 CR 1976410 Inconsistency Found in EC 266508  
 CR 1976549 50.59 Justification Left Blank (EC 288263)  
 CR 1976788 UFSAR Table 8.3.1-1 Not Update to Reflect Current EDG Loading  
 CR 1977140 Swap of Station Battery Chargers per OP-601 during LOOP  
 CR 1977192 E-Bus Voltage Spikes above 506 VAC